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PROCEDURE PURSUANT TO
37 C.F.R. § 1.116

REMARKS

The Official Action dated November 5, 2002 and the references cited therein have been carefully reviewed. In view of the amendments presented herewith and the following remarks, favorable reconsideration and allowance of this application are respectfully requested.

Status of the claims and prosecution:

Claims 1-7, 9, 11, 13, 14, 16, 25 and 26 were examined. In the November 5, 2002 Official Action, all pending claims were finally rejected.

The previous objection to claims 2, 3 and 11 because of informalities was withdrawn. The previous rejections of claims 11 and 13-16 under 35 U.S.C. §102(b) as anticipated by Sweigard et al. (1995) or Shimizu et al. (1991) were withdrawn.

Claims 1-7, 9, 11, 13, 14, 16, 25 and 26 remain rejected under 35 U.S.C. §112, first paragraph, for alleged lack of enablement.

Claims 1-7, 9, 25 and 26 remain rejected under 35 U.S.C. §112, first paragraph, for alleged lack of adequate written description. This rejection was previously applied to claims 11, 13, 14 and 16 in the Official Action mailed April 10, 2002, but was not so applied in the November 5, 2002 Action.

indefiniteness on the following grounds: (1) in claim 5, "having" should be replace with "of";

(2) in claims 6 and 13, alleged lack of clarity as to whether the cells or the vector comprises the nucleic acid molecule of claim 1 or 11, respectively.

All pending claims have been deemed free of the prior art. The reason given was the failure of the prior art to teach or suggest an isolated nucleic acid of SEQ ID NO:1 or nucleic acids from *M. grisea* strain 2539 that hybridize to SEQ ID NO:1 under the conditions recited in claims 1 and 11, and cells transformed with those nucleic acids.

Amendments made in this response:

In accordance with the present amendment, claims 4 and 5 have been canceled, and claims 1, 6, 13, 25 and 26 have been amended.

Claims 1 and 25 have been amended to specify that the nucleic acid molecules recited therein comprise an open reading frame that encodes a polypeptide comprising SEQ ID NO:4. Claims 4 and 5 were canceled because their limitations were incorporated into claim 1. Claims 6 and 13 were amended to clarify that the vectors recited therein contain the nucleic acid molecule of claims 1 and 11, respectively. Claim 26 was amended to make the language more scientifically accurate.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with markings to show changes made." No new matter has been added by the amendments set forth herein.

are in condition for allowance. Support for Applicants' assertion to this effect is set forth

Rejection under 35 U.S.C. §112, first paragraph (enablement):

Claims 1-7, 9, 11, 13, 14, 16, 25 and 26 stand rejected under 35 U.S.C. §112, first paragraph, for alleged lack of enablement. The examiner maintains that the specification, while being enabling for a nucleic acid of SEQ ID NO:1 and bacterial and fungal cells transformed with that nucleic acid, does not reasonably provide enablement for other nucleic acids from *Magnaporthe grisea* strain 2539 or other sources that hybridize with SEQ ID NO:1 under the conditions recited in the claims. Specifically, in view of Farman et al. (2002), the examiner alleges that it is not apparent that any *M. grisea* strain other than the one from which SEQ ID NO:1 was isolated has a nucleic acid that confers CO39-specific avirulence.

Turning first to claims 1-7, 9, 25 and 26, claims 1 and 25 have been amended to now specify that the recited *M. grisea* strain 2539 nucleic acid molecule that confers cultivar-specific avirulence comprises an open reading frame that encodes a polypeptide comprising SEQ ID NO:4 (the product of ORF 3). The experimental results set forth in Example 1 of the specification demonstrate that deletion or frameshift mutations in ORF 1 or ORF 3 result in loss of cultivar-specific avirulence. The results set forth in Examples 3 and 4 of the specification demonstrate that the ORF 3 product is sufficient to confer avirulence. Thus, the specification clearly enables one of skill in the art to make and use the compositions recited in claims 1 and 25, and claims dependent therefrom, without undue experimentation.

Turning next to claims 11, 13, 14 and 16. Applicants traverse the rejection as applied

13, 14 and 16 do not contain the functional limitation that the recited sequences confer

cultivar-specific avirulence. The examiner has asserted that the specification does not teach

use for nucleic acids that hybridize to SEQ ID NO:1 but do not confer CO39-specific avirulence. That statement is not accurate. The utility of these sequences as affirmatively stated at page 16-17 of the specification, and as demonstrated in Example 2, includes their use as probes to detect the presence and/or expression of AVR1-CO39 genes and to identify homologs from other *Magnaporthe* isolates that may then be tested for their ability to confer avirulence. Any of the sequences covered by claim 11 may be used for that purpose. The stated utility is specific to the sequences of claim 11 and it is a substantial utility inasmuch as genes that confer the real-world advantage of cultivar-specific avirulence may be identified through hybridization with those sequences. Thus, the specification states that the invention of claim 11 has a specific and substantial utility aside from conferring cultivar-specific avirulence. Further, the specification clearly teaches how to obtain and use isolated nucleic acids with the requisite level of homology to SEQ ID NO:1 or the ORF 3 portion thereof. Therefore, the invention claimed in claims 11, 13, 14 and 16 is fully enabled by the specification.

For the foregoing reasons, Applicants submit that the presently amended claims satisfy the enablement requirements of the statute. Applicants therefore request withdrawal of the rejection under 35 U.S.C. §112, first paragraph, for lack of enablement.

Rejections under 35 U.S.C. §112, first paragraph (written description):

Claims 1-7, 9, 25 and 26 also stand rejected under 35 U.S.C. §112, first paragraph, for

[illegible] Applicants suggest that the specification does describe structural

features that distinguish AVR-CO39 homologs that confer avirulence from those that do not. It is noted that the rejection was not applied to claims 11, 13, 14 or 16.

Applicants submit that claims 1-7, 9, 25 and 26 as presently amended are adequately supported by the written description presented in the specification. Claims 1 and 25 now call for an isolated nucleic acid molecule that encodes a polypeptide having SEQ ID NO:4. This sequence is set forth in the specification. A demonstration that a polypeptide having this sequence confers cultivar-specific avirulence is set forth in Examples 1, 3 and 4 of the specification. Thus, a structural feature that distinguishes AVR-CO39 homologs that confer avirulence from those that do not is now recited in claims 1 and 25. Applicants therefore submit that the presently amended claims satisfy the written description requirements of the statute and accordingly request withdrawal of the rejection on this ground under 35 U.S.C. §112, first paragraph.

Rejections under 35 U.S.C. §112, second paragraph:

Claims 5, 6 and 13 stand rejected under 35 U.S.C. §112, second paragraph, for alleged indefiniteness. Claim 5 has been canceled, so its rejection is moot. In claims 6 and 13, the examiner found lack of clarity as to whether the cells or the vector comprises the nucleic acid molecule of claim 1 or 11, respectively. Claims 6 and 13 have been amended to clarify that it is the vector that comprises the nucleic acid molecule of claim 1 or claim 11, respectively. The rejection of claims 6 and 13 for indefiniteness should therefore be overcome, and its

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Conclusion:

In view of the claim amendments submitted herewith and the foregoing remarks, the presently-pending claims are believed to be in condition for allowance. Applicants respectfully request early and favorable reconsideration and withdrawal of the objections and rejections set forth in the November 5, 2002 Official Action, and allowance of this application.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Claims 4 and 5 were canceled.

Claims 1, 6, 13, 25 and 26 were amended as follows:

1. (Four times amended) An isolated nucleic acid molecule from *Magnaporthe grisea* strain 2539 comprising a segment of chromosome 1 approximately 1 kb in size and containing an [at least one] open reading frame encoding a polypeptide comprising SEQ ID NO:4, the segment conferring rice cultivar CO39-specific avirulence to fungal plant pathogens that contain the nucleic acid, wherein the nucleic acid molecule hybridizes with SEQ ID NO:1 or its complement under hybridization conditions comprising hybridization for at least 6 hours at 42°C in 5X SSC, 5X Denhardt's reagent, 1.0% SDS, 100 µg/ml denatured, fragmented salmon sperm DNA, 0.05% sodium pyrophosphate and 50% formamide and washing conditions comprising 5 minutes at room temperature in 2X SSC and 1% SDS, followed by 15 minutes at room temperature in 2X SSC and 0.1% SDS; followed by 30 minutes to 1 hour at 37°C in 2X SSC and 0.1% SDS, followed by 2 hours at 55°C in 2X SSC and 0.1% SDS.

6. (Three times amended) A vector for transforming cells, wherein the vector comprises [comprising] the nucleic acid molecule of claim 1.

13. (Three times amended) A vector for transforming cells, wherein the vector comprises [comprising] the nucleic acid molecule of claim 11.

25. (Three times amended) A transgenic epiphytic bacterium that expresses a portion of an isolated nucleic acid molecule from *Magnaporthe grisea* strain 2539 comprising a segment of chromosome 1 approximately 1 kb in size and containing an [at least one] open reading frame encoding a polypeptide comprising SEQ ID NO:4, the segment conferring rice cultivar CO39-specific avirulence to fungal plant pathogens that contain the nucleic acid, wherein the nucleic acid molecule hybridizes with SEQ ID NO:1 or its complement under hybridization conditions comprising hybridization for at least 6 hours at 42°C in 5X SSC, 5X Denhardt's reagent, 1.0% SDS, 100 μg/ml denatured, fragmented salmon sperm DNA, 0.05% sodium pyrophosphate and 50% formamide and washing conditions comprising 5 minutes at room temperature in 2X SSC and 1% SDS, followed by 15 minutes at room temperature in 2X SSC and 0.1% SDS; followed by 30 minutes to 1 hour at 37°C in 2X SSC and 0.1% SDS, followed by 2 hours at 55°C in 2X SSC and 0.1% SDS.

26. (Four times amended) The transgenic epiphytic bacterium of claim 24, which produces [expresses] the amino acid sequence of SEQ ID NO:2 or SEQ ID NO:4.